

What is claimed:

1. A method of promoting dedifferentiation of pancreatic cells, comprising:
obtaining a population of adult or differentiated pancreatic cells; and
allowing the adult or differentiated cells to proliferate,
thereby providing dedifferentiated pancreatic cells.
2. The method of claim 1, wherein the of adult or differentiated pancreatic cells is substantially free of islet cells.
3. The method of claim 1, wherein the pancreatic cells are human pancreatic cells.
4. The method of claim 1, wherein the adult or differentiated pancreatic cells comprises duct cells.
5. The method of claim 1, wherein the population of cells is selected based on the ability to attach to a container.
6. The method of claim 5, wherein the cells that do not attach to the container are removed from the container.
7. The method of claim 6, wherein the cells that do not attach to the container are removed when at least 5 of the surface of the container has cells attached to it.
8. The method of claim 1, wherein an agent which promotes expansion is added to the population of adult or differentiated pancreatic cells.
9. The method of claim 8, wherein the agent is a growth factor or a combination of growth factors.

Sub E¹ 10. The method of claim 9, wherein the growth factor is selected from the group consisting of: keratinocyte growth factor, epidermal growth factor, transforming growth factor- α , hepatocyte growth factor, and combinations thereof.

5 11. The method of claim 9, wherein the growth factor is keratinocyte growth factor.

12. The method of claim 1, wherein the adult or differentiated pancreatic cells are placed on a substrate in a glucose-containing media.

10 13. The method of claim 1, wherein the population of adult or differentiated pancreatic cells is cultured until at least about 70% confluency.

Sub B1 14. A method of obtaining pancreatic islet cells from dedifferentiated pancreatic cells, comprising:

15 adding an extracellular matrix component to a population of dedifferentiated pancreatic cells; and
culturing the cells, to thereby obtaining pancreatic islet cells. B

15 20 15. The method of claim 14, wherein the population of dedifferentiated pancreatic cells has been cultured until at least about 70% confluency.

16. The method of claim 14, wherein at least a portion of the dedifferentiated pancreatic cells express a marker indicative of expansion.

25 17. The method of claim 16, wherein the marker is one or more of: cytokeratin, IPF-1, Pref-1, and lack of insulin.

Sub B2 18. The method of claim 14, wherein the extracellular matrix component is selected from the group consisting of: laminin, collagen, entactin, heparin sulfate proteoglycan, and nidogen. B

19. The method of claim 14, wherein the extracellular matrix component is a basement membrane derived substance.

20. The method of claim 19, wherein the basement membrane is laid down by an Engelbreth-Holm-Swarm tumor cell.

21. The method of claim 14, wherein the extracellular matrix component is added by overlaying the population of dedifferentiated cells.

22. The method of claim 14, wherein at least a portion of the cultured cells form cultivated islet buds.

23. The method of claim 22, wherein the cultivated islet buds comprises hormone positive islet cells.

24. The method of claim 22, wherein the cultivated islet cells express increased levels of insulin expression as compared to the dedifferentiated cells.

25. The method of claim 22, wherein the cultivated islet cells express increased levels of glucagon as compared to the dedifferentiated pancreatic cells.

26. The method of claim 14, wherein the pancreatic islet cells have the ability to secrete insulin in response to glucose.

27. A method of providing islet cells, comprising:
 providing a population of adult or differentiated pancreatic cells selected based upon the ability to attach to a substrate;
 culturing the cells in the presence of a rich medium, to which is added: an agent which promotes expansion;
 culturing the cells until at least 70% confluency to thereby provide dedifferentiated cells; and

contacting the layer of cells with extracellular matrix, or one or more components thereof, thereby providing newly differentiated islet cells.

28. A method of treating a subject having a disorder characterized by insufficient pancreatic islet function, comprising:

obtaining a population of adult or differentiated pancreatic islet cells from the subject;
providing a population of dedifferentiated pancreatic cells by the method of claim 1;
providing a pancreatic islet cells from the population of dedifferentiated cells by the method of claim 14; and
transplanting the pancreatic islet cells to the subject, to thereby treat the subject.

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